

EUROPEAN STANDARD

EN 3740

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2019

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Supersedes EN 3740:1996

English Version

**Aerospace series - Bolts, shouldered, thin hexagonal head,
close tolerance shank, short thread, in titanium alloy,
anodized, MoS2 coated - Classification: 1 100 MPa (at
ambient temperature)/315 °C**

Série aérospatiale - Axes épaulés, à tête hexagonale
basse, tige à tolérance serrée, filetage court, en alliage
de titane, anodisés, lubrifiés MoS2 - Classification : 1
100 MPa (à température ambiante)/315 °C

Luft- und Raumfahrt - Sechskant-Passschrauben,
kleiner Kopf, enge Schafttoleranz, kurzes Gewinde, aus
Titanlegierung, anodisiert, MoS2-geschmiert - Klasse: 1
100 MPa (bei Raumtemperatur)/315 °C

This European Standard was approved by CEN on 10 June 2019.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

	Page
European foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	5
4 Required characteristics	5
4.1 Configuration — Dimensions — Masses	5
4.2 Tolerances of form and position.....	5
4.3 Materials.....	5
4.4 Surface treatment	5
5 Designation.....	8
6 Marking.....	8
7 Technical specification.....	8
8 Oversized bolts.....	8

European foreword

This document (EN 3740:2019) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2020, and conflicting national standards shall be withdrawn at the latest by April 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 3740:1996.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 3740:2019 (E)**1 Scope**

This European standard specifies the characteristics of bolts, shouldered, thin hexagonal head, close tolerance shank, short thread, in titanium alloy, anodized, MoS₂ dryfilm coated, for aerospace applications.

Classification: 1 100 MPa¹/315 °C².

These bolts are intended to be used with washers according to EN 2414 and nuts according to EN 3230.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2414, *Aerospace series — Washers, chamfered, with counterbore, in alloy steel, cadmium plated*

EN 2424, *Aerospace series — Marking of aerospace products*

EN 2491, *Aerospace series — Molybdenum disulphide dry lubricants — Coating methods*

EN 3230, *Aerospace series — Nuts, hexagon, slotted/castellated, reduced height, normal across flats, in steel, cadmium plated — Classification: 900 MPa (at ambient temperature)/235 °C*

EN 4016, *Aerospace series — Oversized bolts*³

ISO 3353-1, *Aerospace — Lead and runout threads — Part 1: Rolled external threads*

ISO 5855-2, *Aerospace — MJ threads — Part 2: Limit dimensions for bolts and nuts*

ISO 7913, *Aerospace — Bolts and screws, metric — Tolerances of form and position*

ISO 9152, *Aerospace — Bolts, with MJ threads, in titanium alloys, strength class 1 100 MPa — Procurement specification*

TR 3775, *Aerospace series — Bolts and pins — Materials*⁴

TR 4070, *Aerospace series — Molybdenum disulphide coatings — List of commercial products*⁴

koniec náhľadu – text ďalej pokračuje v platenej verzii STN

1 Minimum tensile strength of the material at ambient temperature.

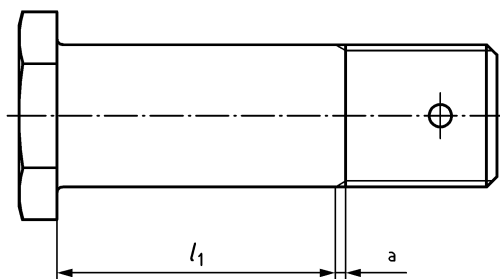
2 Maximum temperature that the bolt can withstand without continuous change in its original characteristics, after return to ambient temperature. The minimum temperature is determined by the surface treatment.

3 Published as ASD-STAN Prestandard at the date of publication of this European standard by AeroSpace and Defence Industries Association of Europe - Standardization (ASD-STAN) (www.asd-stan.org).

4 Published as ASD-STAN Technical Report at the date of publication of this European standard by AeroSpace and Defence Industries Association of Europe - Standardization (ASD-STAN) (www.asd-stan.org)

EN 3740:2019 (E)

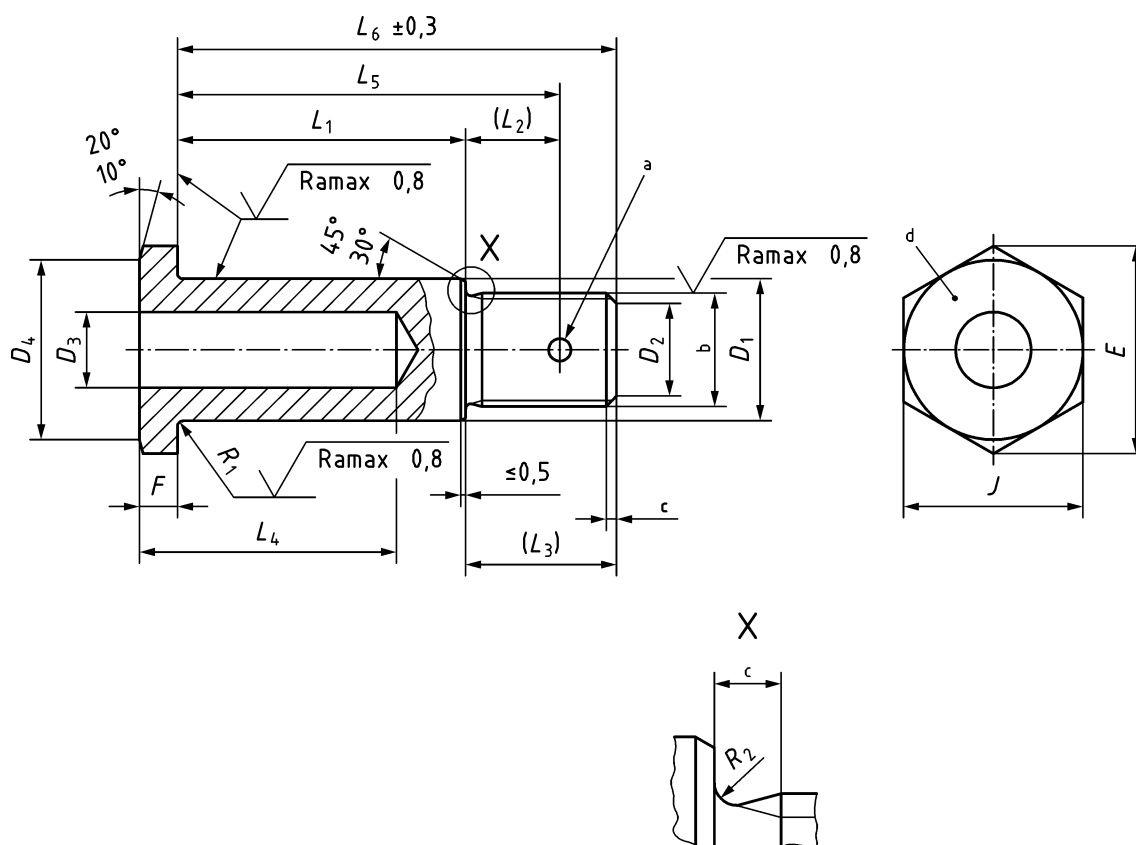
$$\sqrt{\text{Ramax } 3,2} \left(\sqrt{\text{Ramax } 0,8} \right)$$

**Key**

a Conforms to ISO 3353-1.

NOTE For non-quoted dimensions, see Figure 2

Figure 1 — Configuration for diameter codes 050 and 060

**Key**

a 1 hole $\varnothing$ D5

b Thread

c According to ISO 3353-1.

d Marking

Figure 2 — Configuration for diameter codes 080 to 250

Table 1

Diameter code	Thread ^a	D_1	D_2	D_3	D_4	D_5	E	F	J		$L_1 \pm 0,2^{b,c}$		L_2	L_3	R_1	R_2	Mass ^d	
		f7	±0,5	H13	min.	H13	min.	$\begin{smallmatrix} 0 \\ -0,3 \end{smallmatrix}$	nom.	Tol.	$\begin{smallmatrix} L_4 \\ -1 \end{smallmatrix}$	$\begin{smallmatrix} 0 \\ -0,2 \end{smallmatrix}$	+ $\begin{smallmatrix} 20 \\ 0 \end{smallmatrix}$	e	f			
050	MJ5×0,8–4h6h	5	3,4	—	7,4	1,5	8,7	2,5	8	h12	005 to 050	5 to 50	6,0	9,0	0,4	—	1,56	0,09
060	MJ6×1–4h6h	6	4,2	—	9,4		10,9		10	h13	006 to 060	6 to 60	7,0	10,0		—	2,53	0,12
080	MJ6×1–4h6h	8		—							007 to 080	7 to 80				0,25	3,31	0,22
100	MJ8×1–4h6h	10	6,2	—	12,3	1,9	14,3	3,0	13		007 to 080	7 to 80	7,5	11,5		0,40	6,21	0,35
120	MJ10×1,25–4h6h	12	7,9	—	16,3	2,4	18,9	3,5	17		007 to 080	7 to 80	9,0	14,5			11,06	0,50
150	MJ12×1,25–4h6h	15	9,8	8	18,3		3,0	21,1	4,0		19	007 to 080	7 to 80	10,0	16,0	0,6	0,60	15,52
170	MJ14×1,5–4h6h	17	11,5	9	21,3	24,5		22			007 to 080	7 to 80	12,0	19,0	22,31			0,73
200	MJ16×1,5–4h6h	20	13,5	10	23,3	3,8	26,8	5,0	24		007 to 080	7 to 80	12,5	20,5	0,9	0,80	32,76	1,05
220	MJ18×1,5–4h6h	22	15,5	11	26,3		30,2		27		007 to 080	7 to 80	14,5	22,5			43,17	1,27
250	MJ20×1,5–4h6h	25	17,5	12	29,3		33,6		30		007 to 080	7 to 80	15,0	24,5			57,13	1,68

^a In accordance with ISO 5855-2, except the thread major diameter “ d max.” which, for diameter codes 050 and 060, shall be equal to D_1 min. $-0,025$.

^b Increments:

1 for $L_1 \leq 30$

2 for $L_1 > 30$

^c If greater lengths are required, they shall be chosen using the above increments of 2 mm. The length code corresponds to the length L_1 , completed by one or two zeros to the left, where necessary, to obtain a three digit code.

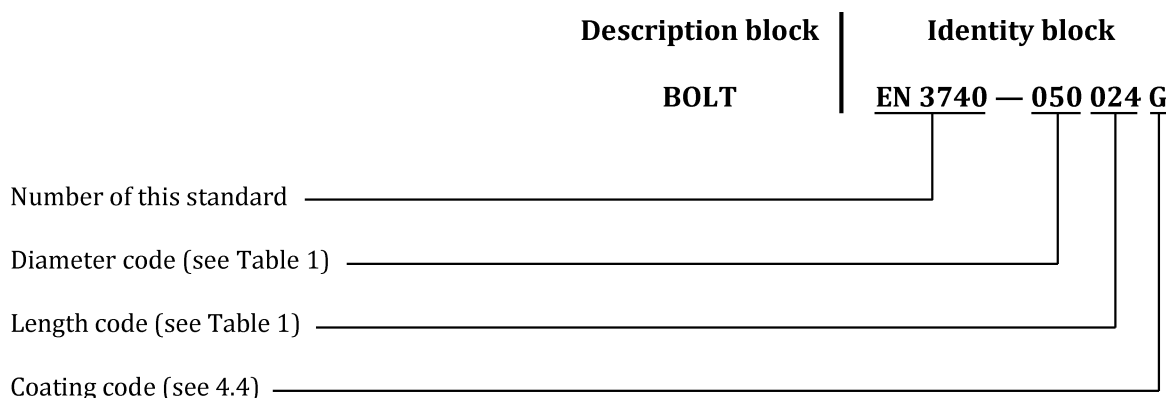
^d Approximate values (kg/1 000 pieces), calculated on the basis of $4,45 \text{ kg/dm}^3$, given for information purposes only.

^e Value for head and first L_6 .

^f Increase for each additional millimetre of L_6 .

EN 3740:2019 (E)**5 Designation**

EXAMPLE



NOTE If necessary, the code I9005 shall be placed between the description block and the identity block.

6 Marking

See Figure 2.

According to EN 2424, style C plus MJ, indented.

7 Technical specification

Technical specification shall be in accordance with ISO 9152, except for clauses:

- Approval of manufacturers: The manufacturer's operations shall be an approved production organisation for aerospace products and shall demonstrate that it has implemented and is able to maintain a quality management system (e. g. according to EN 9100 or an equivalent aerospace accepted and established quality management system).
- Qualification of bolts: The qualification procedure for aerospace standard products (e. g. according to EN 9133 or an equivalent aerospace accepted and established qualification procedure) shall be used and documented according to the specified tests if not otherwise agreed between customer and supplier.
- Mechanical testing must be performed on travellers. Travellers are finished parts, but with an undrilled, massive shank.

8 Oversized bolts

Oversized bolts shall be in accordance with EN 4016.

Bibliography

EN 9100, *Quality Management Systems — Requirements for Aviation, Space and Defence Organizations*

EN 9133, *Aerospace series — Quality Management Systems — Qualification Procedure for Aerospace Standard Products*